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#### **AMENDMENTS TO THE DRAWINGS**

The attached sheet of drawings includes changes to Fig. 3A. This sheet, which includes Figs. 3A-3C and 4A-4C, replaces the original sheet including Figs. 3A-3C and 4A-4C. In Figure 3A, previously omitted reference number 300 has been added.

Attachment: Replacement Sheet

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### **REMARKS**

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims are respectfully requested.

### **Status of Claims**

Claims 1-23 are pending in the application.

Claims 1 and 7-9 have been amended.

### **Amendment of Claims**

Applicants have amended claims 1 and 7-9 to more clearly define what the Applicants regard as the invention.

Specifically, claim 1 has been amended to recite the second material is different from the first material.

Claims 7-9 have been amended to recite "said optical function" instead of "an optical function".

No new matter has been added by this Amendment.

### **Remarks to the Drawings**

Fig. 3A has been amended to match the specification and to correct a typographical error. Specifically, Fig. 3A was amended to include previously omitted reference numeral 300.

The entire drawing sheet containing amended drawing 3A is enclosed for review by the Examiner.

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Applicants respectfully assert that the amendment to Fig. 3A adds no new matter.

#### **Remarks to the Specification**

The amendment to the specification is editorial in nature and does not introduce new matter. Specifically, paragraph [0025] has been amended to include reference numeral 400 to conform to Fig. 7, as originally filed.

#### **Drawings Rejections**

The drawings have been objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign 300 as mentioned in paragraph 21 and reference sign 400 as mentioned in Figure 7 is not in the description.

Applicants respectfully submit that in view of the amendments to the Specification and the Drawings, as discussed above, the objection to the drawings is now moot.

#### **CLAIM REJECTIONS**

##### **35 U.S.C. § 102 Rejections**

In the Office Action, the Examiner rejected claims 1, 2, 5-9, 11, 12, 15, 16, 19-21 and 23 under 35 U.S.C. § 102(b), as being anticipated by Liu et al. (US 2002/0197013). Applicants respectfully traverse this rejection in view of the remarks that follow.

As is well established, in order to successfully assert a *prima facie* case of anticipation, the Examiner must provide a single prior art document that teaches every element and limitation of the claim or claims being rejected.

Each one of independent claims 1, 6, 11 and 19 recites, in paraphrase, a Bragg grating including a plurality of alternating elements of first and second, different, substantially electrically insulating materials (emphasis added). Applicants respectfully submit that Liu et

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al. does not disclose, teach or fairly suggest at least this feature of claims 1, 6, 11 and 19, as discussed in detail below.

In the portions of Liu et al. cited by the Examiner, e.g., paragraphs 22-31, Liu et al. refers to a Bragg grating (elements 113 and 201 in Figs. 1 and 2, respectively) including alternating regions of polysilicon (elements 117 and 205 in Figs. 1 and 2, respectively), and a semiconductor substrate (elements 105 and 203 in Figs. 1 and 2, respectively).

As is well known in the art, a semiconductor substrate is intermediate in electrical conductivity between an electrically insulating material and an electrically conductive material. In other words, a semiconductor substrate, by definition, is neither electrically conductive nor electrically insulating. Accordingly, Applicants respectfully assert that the semiconductor regions described by Liu et al., are clearly not of an electrically insulating material, as specifically recited in claims 1, 6, 11 and 19 of the present Application.

Therefore, Applicants submit that Liu et al. fails to teach or fairly suggest all elements of claims 1, 6, 11 and 19, at least because this reference does not teach a Bragg grating including a plurality of alternating elements of first and second, different, substantially electrically insulating materials.

In view of the above, it is respectfully submitted that independent claims 1, 6, 11 and 19 are patentable over Liu et al. Accordingly, it is respectfully requested that the rejection of claims 1, 6, 11 and 19 under 35 U.S.C. §102(b) be withdrawn.

Furthermore, it is respectfully submitted that independent claims 1, 6, 11 and 19 are patentable, and thus allowable, over any combination of the prior art references on record. In this regard, it is noted that the distinguishing features of independent claims 1, 6, 11 and 19, as discussed above, would not have been obvious at the time the invention was made to a person skilled in the art, in view of Liu et al., alone or in combination with any other cited references, including the Wiesmann et al. reference discussed below in connection with claims 3, 4, 10, 13, 14, 7, 18, and 22.

Claims 2 and 5 depend directly from independent claim 1 and incorporate all the elements of this claim. Claims 7-9 depend directly from independent claim 6 and incorporate all the elements of this claim. Claims 12, 15 and 16 depend directly from independent claim

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11 and incorporate all the elements of this claim. Claims 20, 21, and 23 depend directly from independent claim 19 and incorporate all the elements of this claim. Therefore, it is respectfully submitted that claims 2, 5, 2-9, 12, 15, 16, 20, 21 and 23 are patentable, and thus allowable, at least for the reasons set forth above.

In the Office Action, the Examiner rejected claims 1-4, 6-14 and 16-22 under 35 U.S.C. § 102(e), as being anticipated by Jones (US 2005/0213880). The Examiner contended that the Jones reference constitutes prior art under 35 USC §102(e).

Without conceding the appropriateness of the rejection of claims 1-4, 6-14 and 16-22 based on the merits of the subject matter disclosed by the Jones reference or any of the other references on record, alone or in combination, Applicants respectfully submit that the Jones reference is not prior art under 35 U.S.C 102(a) or (e) because any and all portions of the Jones reference that may be relevant to the subject matter claimed by the present Application were derived from the applicants' joint work.

Submitted concurrently herewith in support of applicants' position is an Affidavit in accordance with CFR 1.132, signed by inventor Richard Jones, stating that all portions of the Jones reference that may be relevant to the subject matter currently claimed in the present Application have originated from the joint work of the Applicants of the present Application, namely, Cohen Oded, Liao Ling, and Jones Richard.

According to M.P.E.P. §716.10, "Under certain circumstances an affidavit or declaration may be submitted which attempts to attribute an activity, a reference or part of a reference to the applicant. If successful, the activity or the reference is no longer applicable.", and "It is incumbent upon the inventors named in the application in response to an inquiry regarding the appropriate inventorship under 35 U.S.C 102(f) or to rebut a rejection under 35 U.S.C 102(a) or (e), to provide a satisfactory showing by way of affidavit under 37 CFR 1.132 that the inventorship of the application is correct in that the reference discloses subject matter derived from the applicant rather than invented by the author, patentee, or applicant of the published application notwithstanding the authorship of the article or the inventorship of the patent or application."

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Accordingly, the Jones reference cannot be used by the Examiner as a prior art reference, alone or in combination with other references, to reject any of the claims of the present Application.

In view of the above, Applicant respectfully requests that the rejection of claims 1-4, 6-14, and 16-22 under 35 USC §102(e) as being unpatentable over the Jones reference be withdrawn.

### **35 U.S.C. § 103 Rejections**

In the Office Action, the Examiner rejected claims 3, 4, 10, 13, 14, 17, 18 and 22 under 35 U.S.C. § 103(a), as being unpatentable over Liu et al. and further in view of Wiesmann et al. "Large UV-induced negative index changes in germanium-free nitrogen-doped planar SiO<sub>2</sub> waveguides".

Applicant respectfully traverses the rejection of claims 3, 4, 10, 13, 14, 17, 18 and 22 under 35 U.S.C. § 103(a), because a prima facie case of obviousness has not been established, as discussed below.

As is well established, in order to establish a prima facie case of obviousness, the prior art references must teach or suggest all the claim limitations.

Claims 3 and 4 depend, directly or indirectly, from independent claim 1 and incorporate all the elements of this claim. Claim 10 depends indirectly from independent claim 6 and incorporates all the elements of this claim. Claims 13, 14, 17 and 18 depend directly from independent claim 11 and incorporate all the elements of this claim. Claim 22 depends directly from independent claim 19 and incorporates all the elements of this claim.

As discussed below, Applicants respectfully submit that neither Liu et al. nor Wiesmann et al. describe teach or fairly suggest a Bragg grating including a plurality of alternating elements of first and second, different, substantially electrically insulating materials, as recited, in paraphrase, by independent claims 1, 6, 11 and 19.

As discussed above with reference to the rejection of claims 1, 2, 5-9, 11, 12, 15, 16, 19-21, Applicants respectfully assert that Liu et al. does not describe, teach or fairly suggest a

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Bragg grating including a plurality of alternating elements of first and second, different, substantially electrically insulating materials, as recited, in paraphrase, by independent claims 1, 6, 11 and 19. This deficiency of Liu et al. can not be cured by Wiesmann et al., as discussed below.

Wiesmann et al. describes inducing refractive index changes in a waveguide formed of a SiON material, by exposing the waveguide to UV light. It is respectfully asserted that Wiesmann et al. does not describe, teach or fairly suggest a Bragg grating including first and second, different materials.

Furthermore, even if a person skilled in the art would have been motivated to combine the Bragg grating of Liu et al. with the SiON material of Wiesmann et al., as suggested by the Examiner, and contrary to applicants' position that such a combination would be improper and unreasonable, still, a structure resulting from a combination as suggested by the Examiner would include alternating regions of the semiconductor substrate, since the Bragg grating described by Liu et al. is formed by disposing the polysilicon elements in the semiconductor substrate. In other words, combining the Bragg grating described by Liu et al. with the SiON material described by Wiesmann et al. would not result in a grating that includes a plurality of alternating elements of first and second, different, substantially electrically insulating materials, as recited, in paraphrase, by independent claims 1, 6, 11 and 19.

Therefore, Liu et al. and/or Wiesmann et al., alone or in combination, do not render independent claims 1, 6, 11 and 19 obvious.

Claims 3 and 4 depend, directly or indirectly, from independent claim 1 and incorporate all the elements of this claim. Claim 10 depends indirectly from independent claim 6 and incorporates all the elements of this claim. Claims 13, 14, 17 and 18 depend directly from independent claim 11 and incorporate all the elements of this claim. Claim 22 depends directly from independent claim 19 and incorporates all the elements of this claim. Therefore, it is respectfully submitted that the patentability of claims 3, 4, 10, 13, 14, 17, 18 and 22 directly from the patentability of independent claims 1, 6, 11 and 19.

In view of the above, Applicants respectfully request that the rejection of claims 3, 4, 10, 13, 14, 17, 18 and 22 under 35 USC §103(a) be withdrawn.

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In view of the foregoing amendments and remarks, the pending claims are deemed to be allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,

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